

Form PTO-1449  
(REV. 8-83)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

015685.P022

SERIAL NO.

09/317,802

## INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

APPLICANT

Christopher Uhlik

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05/24/99

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## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
M	3,704,465	11/28/72	Masak et al.			
M	3,774,209	11/20/73	Fleming et al.			
U	3,798,645	03/19/74	Baurle et al.			
M	3,852,749	12/03/74	Kohler			
M	3,946,385	03/23/76	Ewen			
M	4,005,379	01/25/77	Lerner			
M	4,035,746	07/12/77	Covington Jr.			
M	4,085,319	04/18/78	Deitz et al.			
M	4,128,740	12/05/78	Graziano			
M	4,263,568	04/21/81	Nemit			
M	4,316,191	02/16/82	Sawatari et al.			

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
M 2 237 706 A	5/8/91	United Kingdom			
M 2 295 524 A	5/29/96	United Kingdom			
M 2 313 261 A	11/19/97	United Kingdom			

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

M	Acampora et al., "A New Adaptive MAC Layer Protocol for Wireless ATM Networks in Harsh Fading and Interference Environments", 1997 IEEE, pp. 410-415.
M	Agee, "Blind Separation and Capture of Communication Signals Using A Multitarget Constant Modulus Beamformer", 10/7/89 Proc. IEEE Military Communications Conference, Vol. 2, pp. 1-12.
M	Aschied et al., "An All Digital Receiver Architecture for Bandwidth Efficient Transmission at High Data Rates", 1989, IEEE Transactions on Communications, Vol. 37, No. 8, pp. 804-813.

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M	4,375,622	03/01/83	Hollingsworth et al.			
dy	4,434,505	02/28/84	Gutleber			
U	4,475,010	10/02/84	Huensch et al.			
U	4,626,859	12/02/86	Stansfield			
U	4,639,732	01/27/87	Acoraci et al.			
U	4,639,914	01/27/87	Winters			
	4,737,794	04/12/88	Jones			
U	4,742,356	05/03/88	Kuipers			
U	4,750,147	06/07/88	Roy, III et al.			

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					YES	NO
M 0 639 035 A1	2/15/95	EPO				
M 0 713 261 A1	5/22/96	EPO				
M 0 777 400 A2	6/4/97	EPO				

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

M	Franks, "Synchronization Subsystems: Analysis and Design", 1981, Digital Communications Satellite/Earth Station Engineering, pp. 294-335.
M	Friedlander, "Direction Finding Using an Interpolated Array", 4/3/90, International Conference on Acoustics, Speech, and Signal Processing, Vol. 5, pp. 2951-2954.
M	Friedlander et al., "Direction Finding for Wideband Signals Using an Interpolated Array", 1991, IEEE Publication, pp. 583-587.

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<i>M</i>	4,796,291	01/03/89	Makino	<u>          </u>	<u>          </u>	
<i>M</i>	4,827,395	05/02/89	Anders et al.	<u>          </u>	<u>          </u>	
<i>M</i>	4,829,554	05/09/89	Barnes et al.	<u>          </u>	<u>          </u>	
<i>M</i>	4,837,800	06/06/89	Freeburg et al.	<u>          </u>	<u>          </u>	
<i>M</i>	4,855,748	08/08/89	Brandao et al.	<u>          </u>	<u>          </u>	
<i>M</i>	4,910,794	03/20/90	Mahany	<u>          </u>	<u>          </u>	
<i>M</i>	4,926,186	05/15/90	Kelly et al.	<u>          </u>	<u>          </u>	
<i>M</i>	4,940,963	07/10/90	Gutman et al.	<u>          </u>	<u>          </u>	
<i>M</i>	4,947,452	08/07/90	Hattori et al.	<u>          </u>	<u>          </u>	

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DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
<i>M</i> 95/34103	12/14/95	WO	<u>          </u>	<u>          </u>	
<i>M</i> 98/01963	1/15/98	WO	<u>          </u>	<u>          </u>	
<i>M</i> 98/17037	4/23/98	WO	<u>          </u>	<u>          </u>	

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<i>M</i>	Ganz et al., "A Data-Derived Reference Signal Technique for Adaptive Arrays", IEEE Transactions on Communications, Vol. 37, No. 9, 9/1989, pp. 975-983.
<i>M</i>	Ittis et al., "A Digital DS Spread-Spectrum Receiver With Joint Channel and Doppler Shift Estimation", IEEE Transactions on Communications, Vol. 39, No. 8, 8/1991, pp. 1255-1267.
<i>M</i>	Krishnamurthy et al., "Polling Based Media Access Protocols For Use With Smart Adaptive Array Antennas", 1998 IEEE, pp. 337-344.

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M	4,955,082	09/04/90	Hattori et al.			
M	4,965,732	10/23/90	Roy, III et al.			
M	4,965,849	10/23/90	Kunihiro			
M	4,965,850	10/23/90	Schloemer			
M	4,972,151	11/20/90	Rosen			
M	4,989,204	01/29/91	Shimizu et al.			
M	5,041,833	08/20/91	Weinberg			
M	5,052,799	10/01/91	Sasser et al.			
M	5,093,924	03/03/92	Toshiyuki et al.			
M	5,103,459	04/07/92	Gilhousen et al.			
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					YES	NO
M 98/17071	4/23/98	WO				
M 98/28864	7/2/98	WO				
M 98/33346	7/30/98	WO				

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

M	Lee et al., "Decision Directed Carrier Recovery - Chapter 16: Carrier Recovery", 1994 Digital Communications, 2nd Edition, Kluwer Academic Pub., pp. 725-736.
M	Lee et al., "Decision Directed Carrier Recovery - Chapter 17: Timing Recovery", 1994 Digital Communications, 2nd Edition, Kluwer Academic Pub., pp. 737-764.
M	Lundell et al., "Applications of the Constant Modulus Adaptive Beamformer to Constant and Non-Constant Modulus Signals", Proceedings, 1998 Asilomar Conference on Signals, Systems, and Computers (ACSSC-1988), pp. 432-436.

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M	5,124,697	06/23/92	Moore			
q	5,142,253	08/25/92	Mallavarpu et al.			
u	5,159,593	10/27/92	D'Amico et al.			
u	5,255,210	10/19/93	Gardner et al.			
u	5,260,968	11/09/93	Gardner et al.			
u	5,262,789	11/16/93	Silverstein			
M	5,274,844	12/28/93	Harrison et al.			
u	5,283,540	02/01/94	Myer			
M	5,299,148	03/29/94	Gardner et al.			
u	5,335,249	08/02/94	Krueger et al.			
u	5,345,596	09/06/94	Buchenhorn et al.			

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					YES	NO
M 7-170548	4/7/95	Japan				X

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M	Muhammed et al., "Direction of Arrival Estimation Using Antenna Arrays", 1996, The Bradley Dept. of Electrical Engineering, Mobile and Portable Radio Research Group, Section 3.8, pp. 64-71.
M	vander Veen et al., "A Constant Modulus Factorization Technique for Smart Antenna Applications in Mobile Communications", SPIE 1994 "Advanced Signal Processing Algorithms, Architectures, and Implementations V", Vol. 2296, pp. 230-241.
M	Talwar et al., "Recursive Algorithms for Estimating Multiple Co-Channel Digital Signals Received at an Antenna Array", Proc. Fifth Annual IEEE Dual Use Technologies and Applications Conference.
EXAMINER	DATE CONSIDERED
<i>Uhlik</i>	07/17/02

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M	5,361,303	11/01/94	Eatwell			
M	5,367,559	11/22/94	Kay et al.			
M	5,379,320	01/03/95	Fernandes et al.			
M	5,387,915	02/07/95	Moussa et al.			
M	5,423,072	06/06/95	Iwashita et al.			
M	5,430,760	07/04/95	Dent			
M	5,440,281	08/08/95	Wey et al.			
M	5,448,621	09/05/95	Knudsen			
M	5,457,812	10/10/95	Siira et al.			
M	5,465,399	11/07/95	Oberholtzer et al.			
M	5,471,647	11/28/95	Gerlach et al.			

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M	Papadias et al., "A Space-Time Constant Modulus Algorithm for SDMA Systems", 1996, Proceedings, IEEE 46th Vehicular Technology Conference, pp. 86-90.
M	Talwar et al., "Blind Estimation of Multiple Co-Channel Digital Signals Arriving at an Antenna Array", 1993, Proc. 27th Asilomar Conference on Signals, Systems, and Computers, Vol. 1, pp. 349-342.
M	Rashid-Farrokhi et al., "Joint Power Control and Beamforming for Capacity Improvement in Wireless Networks With Antenna Array", 1996 IEEE GLOBECOM 1996, Vol. 1, pp. 555-559.

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<i>U</i>	5,475,864	12/12/95	Hamabe			
<i>U</i>	5,475,868	12/12/95	Duque-Anton et al.			
<i>U</i>	5,497,505	03/05/96	Koohgoli et al.			
<i>U</i>	5,515,378	05/07/96	Roy, III et al.			
<i>U</i>	5,530,449	06/25/96	Wachs et al.			
<i>U</i>	5,530,917	06/25/96	Andersson et al.			
<i>U</i>	5,532,706	07/02/96	Reinhardt et al.			
<i>U</i>	5,537,438	06/16/96	Mourot et al.			
<i>U</i>	5,543,801	08/06/96	Shawyer			
<i>U</i>	5,546,090	08/13/96	Roy, III et al.			
<i>U</i>	5,548,813	08/20/96	Charas et al.			

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<i>U</i>	Rashid-Farrokhi et al., "Transmit Beamforming for Cellular Communication Systems", Conference on Information Sciences and Systems, CISS-97; 3/1997, 4 pages.
<i>U</i>	Rashid-Farrokhi et al., "Downlink and Uplink Capacity Enhancement in Power Controlled Cellular Systems", Proceedings, 1997 IEEE 47th Vehicular Technology Conference, Vol. 2, 5/97, pp. 647-651.
<i>U</i>	Rashid-Farrokhi et al., "Downlink Power Control and Base Station Assignment", IEEE Communications Letters, Vol. 1, No.4, 07/97, pp. 102-104.

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n	5,555,445	09/10/96	Booth			
q	5,557,657	09/17/96	Barnett			
AL	5,565,873	10/15/96	Dean			
en	5,566,209	10/15/96	Forssen et al.			
u	5,576,717	11/19/96	Searle et al.			
u	5,592,490	01/07/97	Barratt et al.			
M	5,603,082	02/11/97	Hamabe			
en	5,603,089	02/11/97	Searle et al.			
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u	Xu et al., "Throughput Multiplication of Wireless LANs for Multimedia Services: SDMA Protocol Design", 1994, IEEE, pp. 1326-1332.
u	Swidlehurst et al., "Analysis of a Decision Directed Beamformer", IEEE Transactions on Signal Processing, Vol. 43, No. 12, 12/95, pp. 2920-2927.

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M	5,621,752	04/15/97	Antonio et al.			
M	5,625,885	04/29/97	Nakazawa et al.			
M	5,638,375	06/10/97	Dettro et al.			
M	5,649,287	07/15/97	Forssen et al.			
M	5,673,291	09/30/97	Dent			
M	5,675,581	10/7/97	Soliman			
M	5,684,836	11/04/97	Nagayasu et al.			
M	5,689,219	11/18/97	Piirainen			
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M	Zhang et al., "Performance of a Modified Polling Strategy for Broadband Wireless LANs in a Harsh Fading Environment", 1991, GLOBECOM 1991, pp. 1141-1146.
M	US98/25364, PCT Search Report, 05/11/99.

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<i>U</i>	5,697,066	12/09/97	Acampora			
<i>U</i>	5,726,978	03/10/98	Frodigh et al.			
<i>U</i>	5,732,076	03/24/98	Ketseoglou et al.			
<i>U</i>	5,745,858	04/28/98	Sato et al.			
<i>U</i>	5,748,676	05/05/98	Mahany			
<i>U</i>	5,752,165	05/12/98	Hokkanen			
<i>U</i>	5,774,461	06/30/98	Hyden et al.			
<i>U</i>	5,809,009	09/15/98	Matsuoka et al.			
<i>U</i>	5,809,019	09/15/98	Ichihara et al.			

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<i>M</i>	5,825,762	10/20/98	Kamin, Jr. et al.			
<i>M</i>	5,828,658	10/27/98	Ottersten et al.			
<i>M</i>	5,845,212	12/01/98	Tanaka			
	5,867,123	02/02/99	Geyh et al.			
<i>M</i>	5,887,038	03/23/99	Golden			
<i>M</i>	5,905,721	05/18/99	Liu et al.			
<i>M</i>	5,909,470	06/01/99	Barratt et al.			
<i>M</i>	5,914,946	06/22/99	Avidor et al.			

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<i>M</i>	5,930,243	07/27/99	Parish et al.			
<i>M</i>	5,933,421	08/03/99	Alamouti et al.			
<i>M</i>	5,955,992	09/21/99	Shattil			
<i>M</i>	5,970,394	10/19/99	Arpee et al.			
<i>M</i>	5,973,638	10/26/99	Robbins et al.			
<i>M</i>	5,999,826	12/07/99	Whinnett			
<i>M</i>	6,005,854	12/21/99	Xu et al.			
<i>M</i>	6,009,124	12/28/99	Smith et al.			
<i>M</i>	6,018,317	01/25/00	Dogan et al.			
<i>M</i>	6,018,555	01/25/00	Mahany			
<i>M</i>	6,018,643	01/25/00	Golemon et al.			

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

*M. Uhlik*

DATE CONSIDERED

02/17/02

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Form PTO-1449  
(REV. 8-83)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

015685.P022

SERIAL NO.

09/317,802

## INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

APPLICANT

Christopher Uhlik

FILING DATE

05/24/99

GROUP

2749

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
M	6,023,203	02/08/00	Parish			
u	6,061,553	05/09/00	Matsuoka et al.			
u	6,064,865	05/16/00	Kuo et al.			
u	6,067,324	05/23/00	Harrison			
M	6,108,565	08/22/00	Scherzer			
M	6,131,016	10/10/00	Greenstein et al.			
h	6,154,661	11/28/00	Goldburg			

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DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
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Uhlik

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Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

Sheet

**1**

of

1

**Complete if Known**

Application Number

09/317,802

Filing Date

May 24, 1999

First Named Inventor

Christopher Uhlik

Group Art Unit

2749

Examiner Name

N. Corsaro

Attorney Docket Number

15685P022

## OTHER ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.†	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
<i>M</i>	1	Farsakh et al., "A REAL TIME DOWNLINK CHANNEL ALLOCATION SCHEME FOR AN SDMA MOBILE RADIO SYSTEM," IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Vol. 3, 10/18/96, pgs. 1215-1220.	

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Substitute for form 1449A/PTO <b>INFORMATION DISCLOSURE</b> <b>STATEMENT BY APPLICANT</b> MAR 0 5 2002 TRADEMARK				<b>Complete if Known</b>	
Application Number				09/317,802	
Filing Date				May 24, 1999	
First Named Inventor				Christopher Uhlik	
Group Art Unit				2749	
Examiner Name				N. Corsaro	
Attorney Docket Number				15685P022	

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Examiner Signature		Date Considered	02/17/02
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**(use as many sheets as necessary)**

Application Number	09/317,802
Filing Date	May 24, 1999
First Named Inventor	Christopher Uhlik
Group Art Unit	2749
Examiner Name	N. Corsaro
Attorney Docket Number	15685P022


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